

An Error Taxonomic Approach to Support Inspection Training

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Inspectors play a critical role in ensuring the quality of aircraft inspection in the general aviation environment. The quality of visual inspection depends upon the ability of the inspectors to correctly identify and weed out defects. Literature has shown training to improve the performance of inspectors in search and decision components of visual inspection. This paper outlines an error taxonomic approach used in designing a computer based inspection-training program to support aircraft inspection task in the General Aviation environment.

Customized Computer Based Training in Aircraft Inspection: Development and Evaluation

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Visual inspection plays a vital role in aircraft inspection process. According to FAA almost 80% of non-destructive inspection in aircrafts is accomplished through visual inspection. Therefore proper training for performing the visual inspection becomes an obvious issue. This paper focuses on the 'Design and Analysis' module of a computer based training tool, which is being developed by ATSL (Advanced Technology Systems Laboratory) of Clemson University. This computer based training tool (GAITS: General Aviation Inspection Training System) focuses on the good practices of visual inspection. The students are supposed to go through a training module and after successful completion of that module they will perform actual inspection tasks in a simulator module. The objective of the Design and Analysis module is to enable the instructor 1) analyze the results of the students' performance in the training and simulator modules; 2) create scenarios for the inspector to perform in the simulator module. Thus the 'Design and Analysis' module provides the instructor an opportunity to customize the simulator module of GAITS. This paper will explain the design procedure, development methods and usability evaluation of this particular module of GAITS.

Development and Evaluation of A CBT to Support Decision Making

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Visual inspection plays a major role in aircraft inspection in the General Aviation environment. Superior decision making ability is critical in achieving improved inspection performance. The aim of this research is to develop a computer based training program for aircraft inspectors, compare and evaluate the traditional method of inspection training with the computer based training. The ultimate objective is to document the subsequent improvements in human decision making process due to the use of CBT. The relative improvement in the decision making process will be studied and investigated in order to further evaluate and develop the training software. This process will be iterative which will help develop usable and useful software and achieve optimal human decision making performance, the achievement of which is crucial in ensuring aviation safety.

Use of HTA in Designing Computer Based Simulator

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Inspection is an important step in ensuring product quality especially in aircraft industry where safety is the highest priority. Since safety is involved, effective strategies need to be set to improve quality and reliability of aircraft inspection/maintenance and for reducing errors.

Humans play a critical role in visual inspection of airframe structures. Major advancements have been made in aircraft inspection, but General Aviation (GA) lags behind. Strategies that lead to improvement in inspection processes with GA environment will ensure reliability of the overall air transportation system. Training is one such strategy where advanced technology can be used for inspection training and reducing errors. A hierarchical task analytic (HTA) approach was used to systematically record and analyze the aircraft inspection/maintenance systems in geographically dispersed GA facilities. Using the task analytic approach a computer based training system (GAITS: General Aviation Inspection Training System) was developed for aircraft inspection that is anticipated to standardize and systematize the inspection process in GA. This computer based training system consists of a separate training and simulator module. This paper documents the work involved in the development of the simulator module of GAITS.